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CLAIMS

1. Apparatus for assessing and monitoring placement of an endo-tracheal tube for ventilation of patients, comprising:
- 5 - a measuring unit with at least two measuring electrodes,
 - a power source for activating the measuring electrodes,
 - a user interface device to start/stop the monitoring,
 - a display or an alarm device for signalling whether the lungs are being inflated or not, and consequently whether the intubation device is correctly or incorrectly
10 positioned, and
 - a connection unit for transmitting signals between the electrodes, the power source, the user interface device and the display device,
 c h a r a c t e r i z e d i n that the electrodes are adapted for placement on the thoracic cavity so as to measure the thoracic impedance externally.
- 15 2. Apparatus according to claim 1,
 c h a r a c t e r i z e d i n that it comprises four electrodes adapted for measurement of thoracic impedance.
- 20 3. Apparatus according to claim 1,
 c h a r a c t e r i z e d i n that the connection unit comprises
 - a processing unit adapted for: receiving a start command from a user interface device, controlling the measurement process, calculating and analysing impedance signals, identifying significant impedance changes over time, and transmitting a
25 signal representative of "ventilation" or "no ventilation" to a display or an alarm device,
 and that the device further comprises
 - a memory unit for storage of measured, calculated and reference values.
- 30 4. Apparatus according to claim 1,
 c h a r a c t e r i z e d i n that the power source consists of portable batteries.
5. Apparatus according to claim 1,
 c h a r a c t e r i z e d i n that the user interface device comprises an "on/off" switch
35 or a three position switch, a first "off" position, a second "single measurement" position, and a third "monitoring" position.

6. Apparatus according to claim 1,
c h a r a c t e r i z e d i n that the alarm device comprises a sound emitting device
and/or a light emitting device.

5 7. Apparatus according to claim 1,
c h a r a c t e r i z e d i n that the processing unit is adapted for calculating and
analysing impedance in deflated and inflated lungs, for storing measured impedance
values in the storage unit, and for creating reference values based on measured
values when no reference values are present in the storage unit.

10 8. Apparatus according to claim 1,
c h a r a c t e r i z e d i n that the user interface is adapted for inputting reference
thoracic impedance values, threshold impedance values, and/or patient
characteristics to the processing unit.

15 9. Apparatus according to any of the preceding claims,
c h a r a c t e r i z e d i n that it is adapted for integration in a defibrillating device.

20 10. Use of an apparatus for measurement of thoracic impedance for controlling and
monitoring endotracheal intubation.

25 11. Method for externally assessing and monitoring placement of an endo-tracheal
tube for ventilation of patients, where a) thoracic impedance signals are obtained
based on measurement data obtained from measurement electrodes adapted for
placement on the patient's thorax,
c h a r a c t e r i z e d i n that it further comprises
b) analysing the impedance signals to identify changes in impedance over time,
c) comparing the impedance changes to a predetermined threshold value, and
d) activating a first display or alarm device if the changes' magnitude exceeds the
30 predetermined value to indicate correct intubation and/or activating a second
display or alarm device different from the first device if the change's magnitude
does not exceed the predetermined value to indicate incorrect intubation.

35 12. Method according to claim 11,
c h a r a c t e r i z e d i n that steps a)-c) are performed at a processing unit
connected to measurement electrodes, and that the threshold value is stored in a
storage unit connected to the processing unit.

40 13. Method according to claim 12,
c h a r a c t e r i z e d i n that previous to steps a) a start signal is given to the
processing unit by a user and that steps a)-d) are repeated a during a predetermined
period of time or until a stop signal is given to the processing unit by a user.

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14. Computer program stored in a memory, for execution by a processing unit,
c h a r a c t e r i z e d i n that it comprises instructions which on execution perform
a method according to one of the claims 10-12.